

Polymer Add (Thailand) Co.,Ltd.

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TECHNICAL DATA SHEET

MICRONISED FUMARIC ACID

Product Identification

Property	Information
Product name	Micronised Fumaric Acid (For Unsaturated Polyester Resins)
Product code	MFA-UPR
Chemical name	Fumaric Acid
Chemical description	trans-Butenedioic acid
Chemical formula	$C_4H_4O_4$
CAS number	110-17-8
Molecular weight	116.07 g/mol
Product form	Micronised white crystalline powder
Application	Reactive raw material for Unsaturated Polyester Resins

Product Description

MFA-UPR is a high-purity micronised Fumaric Acid developed for use as a reactive unsaturated dicarboxylic acid in the manufacture of Unsaturated Polyester Resins.

Conventional fumaric acid has relatively low solubility and is normally supplied as comparatively coarse crystals. Micronisation increases the available particle surface area, improving wetting, dispersion and incorporation into glycols and other resin raw materials.

The controlled fine particle size helps reduce undispersed coarse crystals and supports more consistent resin-batch processing.

Principal Application

Reactive monomer for Unsaturated Polyester Resin production

Micronised Fumaric Acid is incorporated into the polyester backbone through polycondensation with glycols. Its unsaturation subsequently participates in crosslinking with a reactive monomer such as styrene.

The resulting resins are used in:

- Fibreglass-reinforced plastic products.
- Chemical storage tanks.
- Corrosion-resistant equipment.
- Industrial pipes and profiles.
- Marine composite components.
- Automotive composite parts.

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- Construction panels.
- Electrical and engineered composite components.

Advantages of the Micronised Grade

Compared with conventional coarse fumaric acid crystals, MFA-UPR provides:

- Greater available particle surface area.
- Improved wetting by glycols.
- Faster and more uniform incorporation.
- Reduced occurrence of undispersed crystals.
- More consistent distribution throughout the reaction mixture.
- Improved feeding and batch reproducibility.
- Potential reduction in incorporation time.
- Reduced sedimentation of coarse material before reaction.

Micronisation improves the physical incorporation of fumaric acid. Final resin properties depend on the complete formulation and polymerization conditions.

Specification

Property	Specification
Appearance	White or nearly white, free-flowing powder
Fumaric acid assay	99.5–100.5%
Maleic acid	≤0.10%
Moisture	≤1.50%
Residue on ignition	≤0.10%
Melting/decomposition range	286–302°C
Particle size, D50	3–7 µm
Particle size, D90	≤15 µm
Particle size, D97	≤20 µm
Particle size, D99	≤25 µm
Maximum particle size, D100	≤30 µm

Test Method

Particle-size distribution is measured by laser diffraction using a validated non-reactive dispersion medium in which fumaric acid does not appreciably dissolve.

The dispersion medium, sample concentration, ultrasonic treatment and instrument settings must remain consistent for production-quality control.

Processing Guidance

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- Add MFA-UPR gradually under effective agitation.
- Avoid localized accumulation of dry powder.
- Ensure uniform wetting before raising the reaction temperature.
- Maintain effective dust extraction during reactor charging.
- Establish the addition sequence according to the glycol composition and resin formulation.
- Confirm incorporation time, reaction profile and residual undissolved material through production trials.

The optimum addition procedure and reaction conditions must be established by the resin manufacturer.

Packaging

- 20 kg or 25 kg net in polyethylene-lined bags.
- Alternative packaging is available upon request.

Storage

Store in the original sealed packaging in a cool, dry and well-ventilated area.

Protect the product from moisture, excessive heat, direct sunlight, contamination and strong oxidizing materials. Avoid breathing airborne dust and prevent contact with eyes and skin.

Shelf Life

Twenty-four months from the manufacturing date when stored in unopened original packaging under the recommended conditions.

Regulatory Status

MFA-UPR is an industrial grade intended for resin and polymer manufacturing. It is not offered as a food, pharmaceutical or cosmetic grade.

Disclaimer

The information in this document is provided as technical guidance. The customer is responsible for determining the appropriate processing conditions, regulatory compliance and suitability of the product in its formulation and production equipment.